FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

4 to 10 May, 2014 (Week 19)

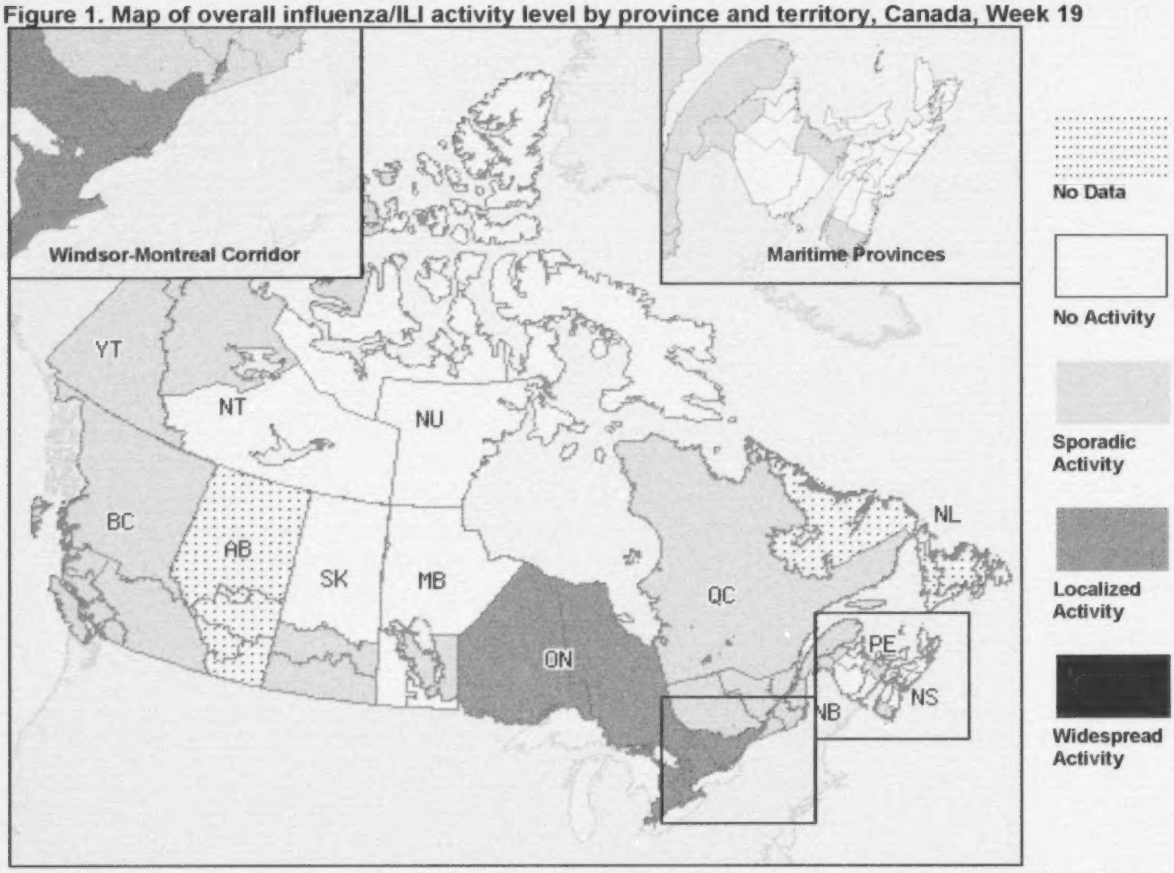
Overall Summary

- In week 19, influenza B continued to circulate in several regions across Canada, but levels are stable or declining. Late-season influenza B activity is past its peak, and remains within expected levels for this time of year. Influenza A activity has been steadily declining over the last four weeks.
- Influenza B is having a greater impact on adults 65 years of age and older and young persons 5 to 19 years of age, compared to influenza A(H1N1) which circulated earlier in the year.
- As of week 19, 4,731 hospitalizations and 275 deaths have been reported from participating regions, which is fewer than were reported last year.

Influenza/ILI Activity (geographic spread)

In week 19, no region reported widespread activity and eight regions reported localized activity, including all seven regions in Ontario and one region in Quebec (Figure 1). Two provinces did not report data for week 19, but both have reported only sporadic or no activity since early February.

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 19

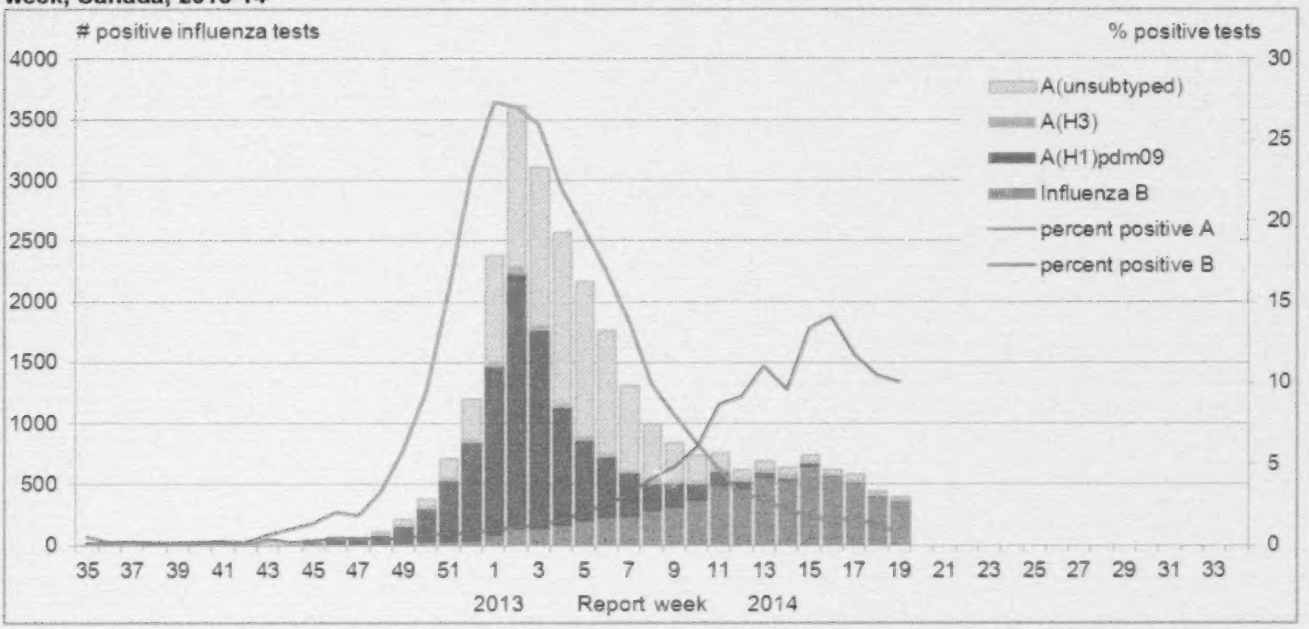


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

The number of positive influenza tests decreased from 445 in week 18 to 401 (11.0% of tests) in week 19. Nationally, late-season circulation of influenza B peaked in week 15 and continues to decline (Figure 2). Influenza B remained the predominant virus in week 19, representing 92% of influenza detections. Most jurisdictions have reported stable or declining levels of influenza detections over recent weeks (Table 1). Significantly greater proportions of influenza B cases have been ≥65 years of age and 5-19 years of age compared to cases of A(H1N1)pdm09. Among cases for which information on age and type/subtype has been received, 38% of the cases in week 19 were ≥65 years of age compared to 21% of cases for the season to date (Table 2).

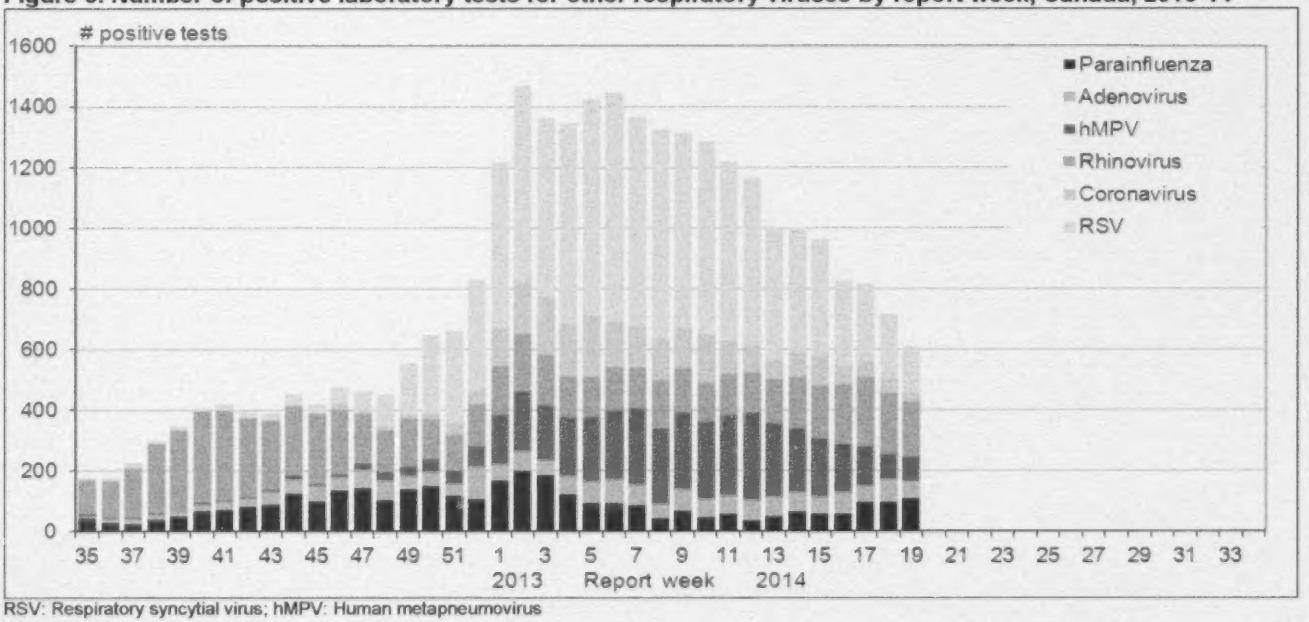
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



The number of positive tests for RSV, coronavirus, human metapneumovirus, and rhinovirus has continued to decline in recent weeks. The number of positive tests for parainfluenza and adenovirus have been following a general upward trend in recent weeks, in keeping with their broader year-round circulation (Figure 3).

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces[1]	Weekly (May 4 to 10, 2014)					Cumulative (August 25, 2013 to May 10, 2014)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	7	0	6	1	20	1,820	1,616	63	141	344
AB	6	1	3	2	38	3,852	3,455	81	316	422
SK	0	0	0	0	22	1,383	988	8	387	156
MB	2	1	0	1	7	682	463	5	214	47
ON	11	1	7	3	211	5,739	2,490	371	2,878	2,881
QC	4	0	0	4	48	5,357	677	5	4,675	2,649
NB	0	0	0	0	7	1,488	370	1	1,117	100
NS	0	0	0	0	6	174	134	4	36	39
PE	0	0	0	0	0	119	118	0	1	2
NL	2	0	0	2	10	373	104	0	269	236
Canada	**32**	**3**	**16**	**13**	**369**	**20,987**	**10,415**	**538**	**10,034**	**6,876**
Percentage[2]	8.0%	9.4%	50.0%	40.6%	92.0%	75.3%	49.6%	2.6%	47.8%	24.7%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2013-14

Age groups (years)	Weekly (May 4 to 10, 2014)					Cumulative (August 25, 2013 to May 10, 2014)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	0	0	0	0	5	3,260	1,451	39	1,770	515	3,775	16.7%
5-19	2	0	0	2	7	1,329	707	23	599	777	2,106	9.3%
20-44	4	2	0	2	27	5,080	2,811	43	2,226	960	6,040	26.7%
45-64	3	0	1	2	46	4,464	2,388	62	2,014	1,408	5,872	26.0%
65+	10	0	3	7	49	2,578	1,000	165	1,413	2,084	4,662	20.6%
Unknown	1	0	1	0	0	137	102	22	13	9	146	0.6%
Total	20	2	5	13	134	16,848	8,459	354	8,035	5,753	22,601	100.0%
Percentage[2]	13.0%	10.0%	25.0%	65.0%	87.0%	74.5%	50.2%	2.1%	47.7%	25.5%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 2,039 influenza viruses [112 A(H3N2), 1,366 A(H1N1)pdm09 and 561 influenza B]. The vast majority (99%) of viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine. Two A(H1N1)pdm09 viruses showed reduced titres to antiserum against the reference A/California/07/2009 strain, and one A(H3N2) virus showed reduced titres to antiserum against the reference A/Texas/50/2012 strain. Twenty-six influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

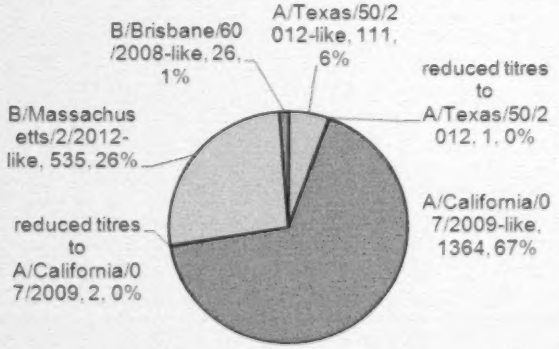

B/Brisbane/60/2008-like, 26, 1%
A/Texas/50/2012-like, 111, 6%
reduced titres to A/Texas/50/2012, 1, 0%
B/Massachusetts/2/2012-like, 535, 26%
A/California/07/2009-like, 1364, 67%
reduced titres to A/California/07/2009, 2, 0%

Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 2,039

The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 1,796 influenza viruses for resistance to oseltamivir and all but five were sensitive. All 1,796 viruses tested for resistance to zanamivir were sensitive. All 1,556 influenza A viruses tested for amantadine resistance were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

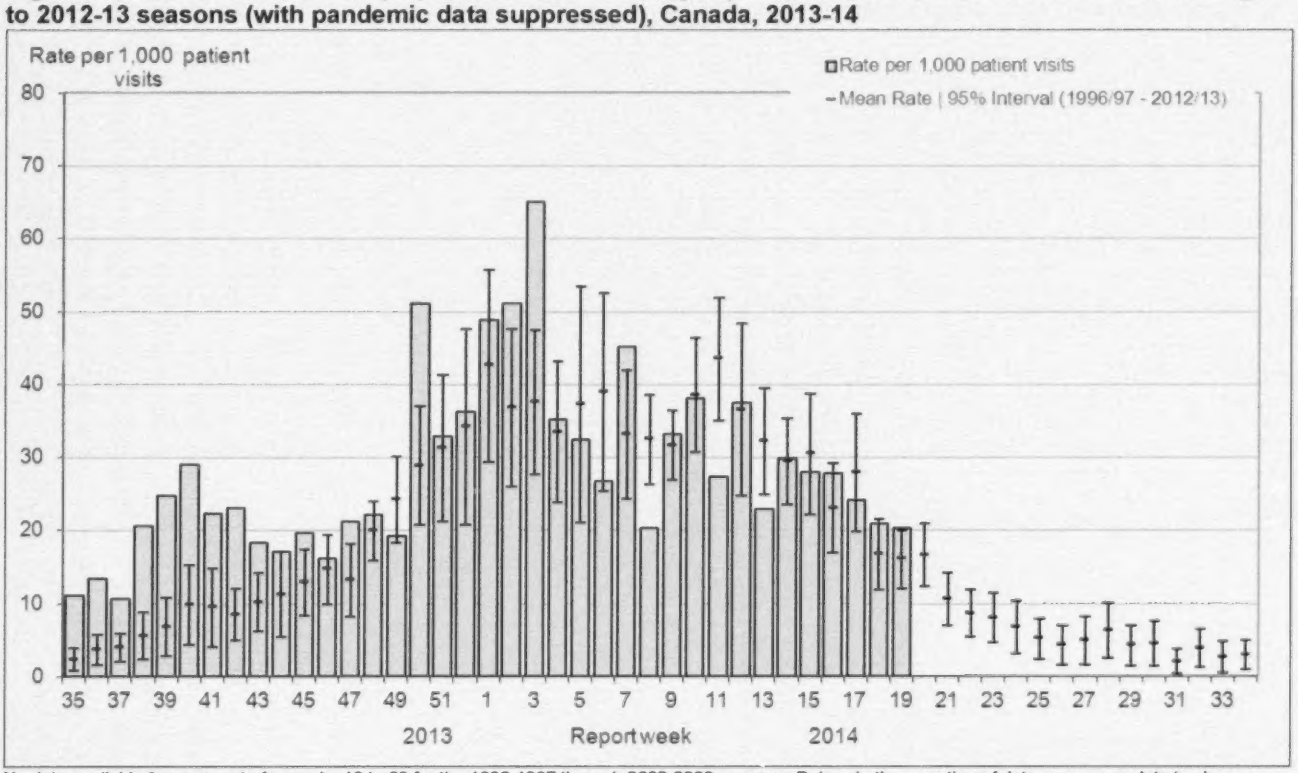
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	92	0	92	0	143	143 (100%)
A (H1N1)	1320	5 (0.4%)	1321	0	1413	1413 (100%)
B	384	0	383	0	NA[1]	NA[1]
TOTAL	1796	5 (0.3%)	1796	0	1556	1556 (100%)

[1] NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate was similar to the previous week at 20.2 consultations per 1,000 patient visits in week 19; which was slightly above the expected range for week 19 (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

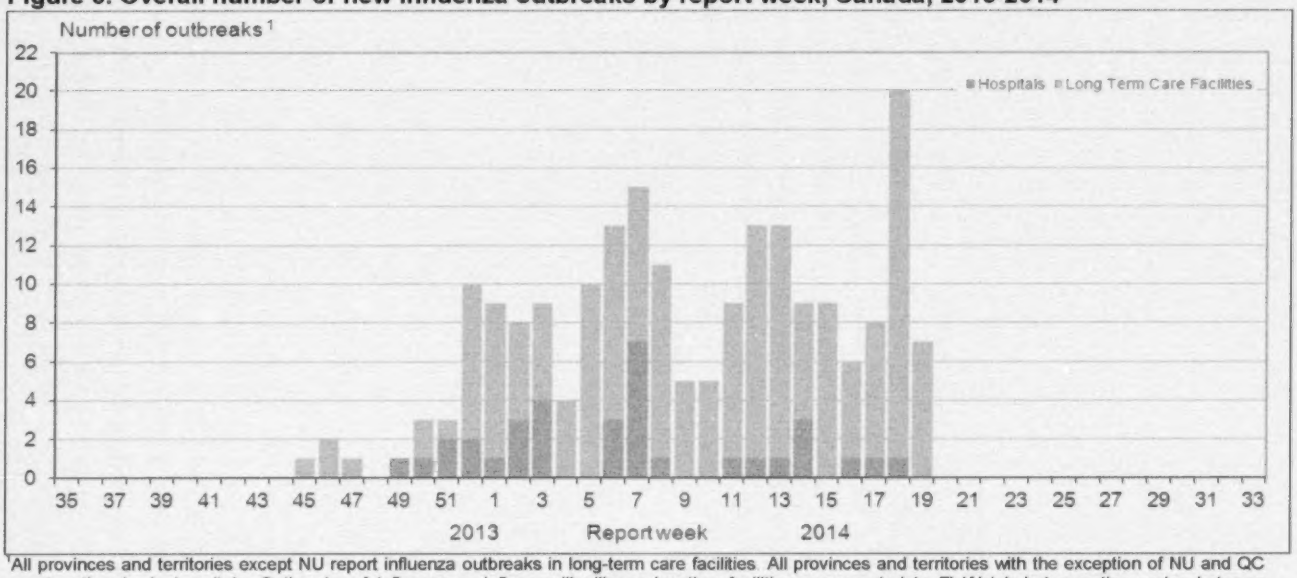


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

The number of new influenza outbreaks decreased from 21 in week 18 to seven in week 19 (Figure 6). All were in long-term care facilities and six of the seven outbreaks were influenza B. The 7th was an outbreak of influenza A(unsubtyped). Two provinces did not report data for week 19.

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

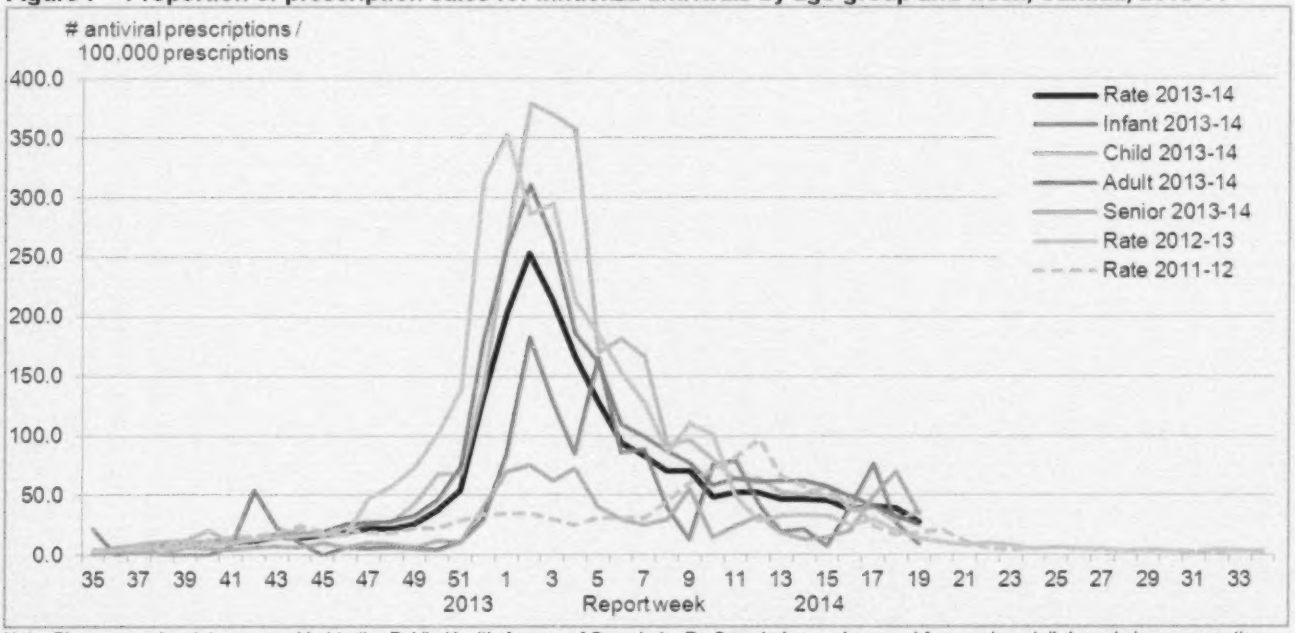


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

In week 19, the proportion of prescriptions for antivirals declined, in keeping with laboratory detections of influenza. Overall this season, the largest proportion of prescriptions for antivirals has been among children 2-18 years of age and adults 19-64 years of age (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 19, seven new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to six in week 18. Six cases reported in week 19 had influenza B (Figure 8a). A greater proportion of cases with influenza B this season have been children between 2 and 10 years of age compared to A(H1N1)pdm09. Two ICU admissions were reported in week 19 both children 6-23 months of age with influenza B, and no deaths were reported.

To date this season, a total of 689 influenza-associated paediatric hospitalizations have been reported by the IMPACT network, 80% of which have been influenza A, and almost all of those subtyped (97%) were A(H1N1)pdm09. Children <5 years of age represent 73% of cases to date (Table 4). One hundred and five ICU admissions have been reported, of which 70 (67%) were children <5 years of age (Figure 9a). All but 13 were cases with influenza A, and 97% of those subtyped were A(H1N1)pdm09. Among the 102 ICU cases with available data, 65 (64%) were reported to have underlying medical conditions. No deaths have been reported. A smaller number of paediatric hospital admissions have been reported this year compared to the 2012-13 season.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 19, 14 new laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported through active surveillance by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network, compared to 15 in week 18 (Figure 8b). Since the beginning of March the majority of hospitalizations have been associated with influenza B. This season, a significantly greater proportion of cases of influenza B have been ≥65 years of age compared to cases of A(H1N1)pdm09. Two ICU admissions were reported in week 19, one adult 45-64 years of age and one ≥65 years of age, both with influenza A(unsubtyped). No deaths were reported in week 19.

To date this season, 1,862 influenza-associated hospitalizations have been reported by the PCIRN-SOS network, 1,308 (70.2%) with influenza A, predominantly A(H1N1)pdm09 (Table 5). Compared to the 2012-13 season, slightly more cases have been reported, although the peak number of cases was smaller. A greater number of cases have been reported during March and April compared to last year, with five times more cases of influenza B reported to date. ICU admission was required for 300 hospitalizations, all but 44 of which were cases with influenza A (133 A(H1N1)pdm09, eight A(H3N2) and 114 A(unsubtyped)). A greater proportion of cases have been admitted to the ICU this season compared to last year, but the proportion of deaths has been similar. Of the ICU admissions with available information, 85.0% (176/207) were reported to have at least one comorbidity, and 69.0% (171/248) reported not having been vaccinated this season. Ninety-nine deaths have been reported, all but 18 with influenza A (51 A(H1N1)pdm09, three A(H3N2) and 27 A(unsubtyped)); nine cases 20-44 years of age, 35 cases 45-64 years of age and 55 cases ≥65 years of age (Figure 9b). Among fatal cases with available information, 47.4% (36/76) were reported to have at least one comorbidity, and 93.2% (55/59) reported not having been vaccinated this season.

Note: PCIRN-SOS conducted passive surveillance from April 30th to November 14th, 2013. Cases reported during this period were identified by laboratory detection of influenza among patients admitted to participating hospitals. Active surveillance began November 15th during which time PCIRN site coordinators investigate cases potentially related to influenza. Data from both active and passive surveillance reported during the 2013-14 season are included in this report. The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

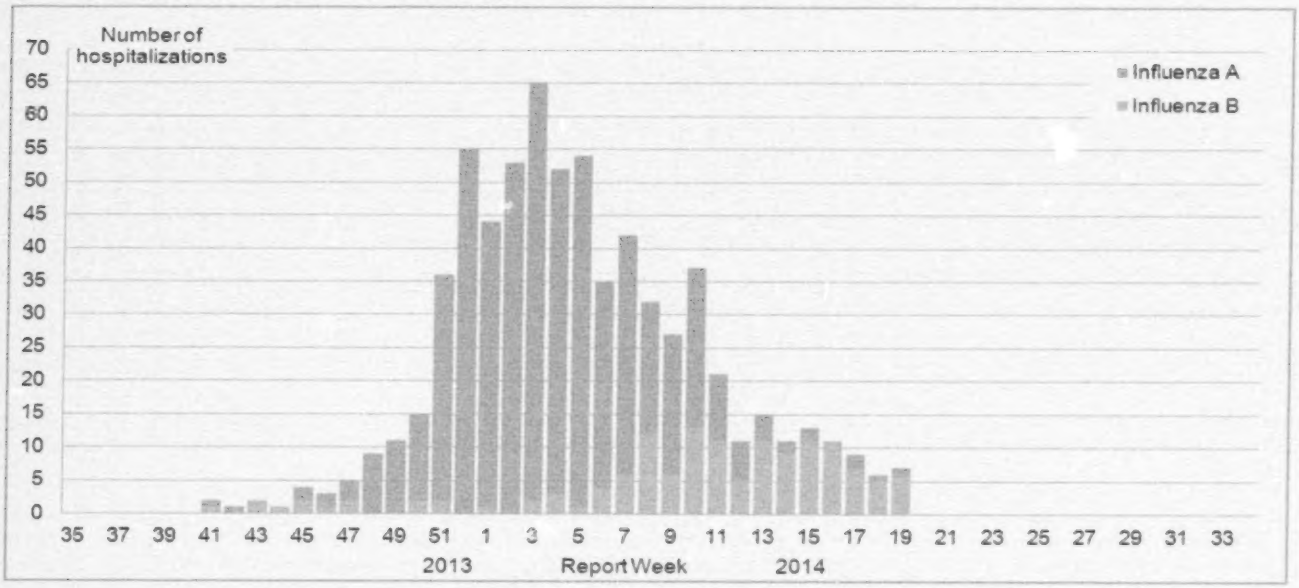
Age groups	Cumulative (25 Aug. 2013 to 10 May 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	103	35	0	68	8	111 (16%)
6-23m	162	56	1	105	25	187 (27%)
2-4y	165	55	3	107	42	207 (30%)
5-9y	82	27	1	54	50	132 (19%)
10-16y	40	14	1	25	12	52 (8%)
Total	552	187	6	359	137	689
% [1]	80.1%	33.9%	1.1%	65.0%	19.9%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

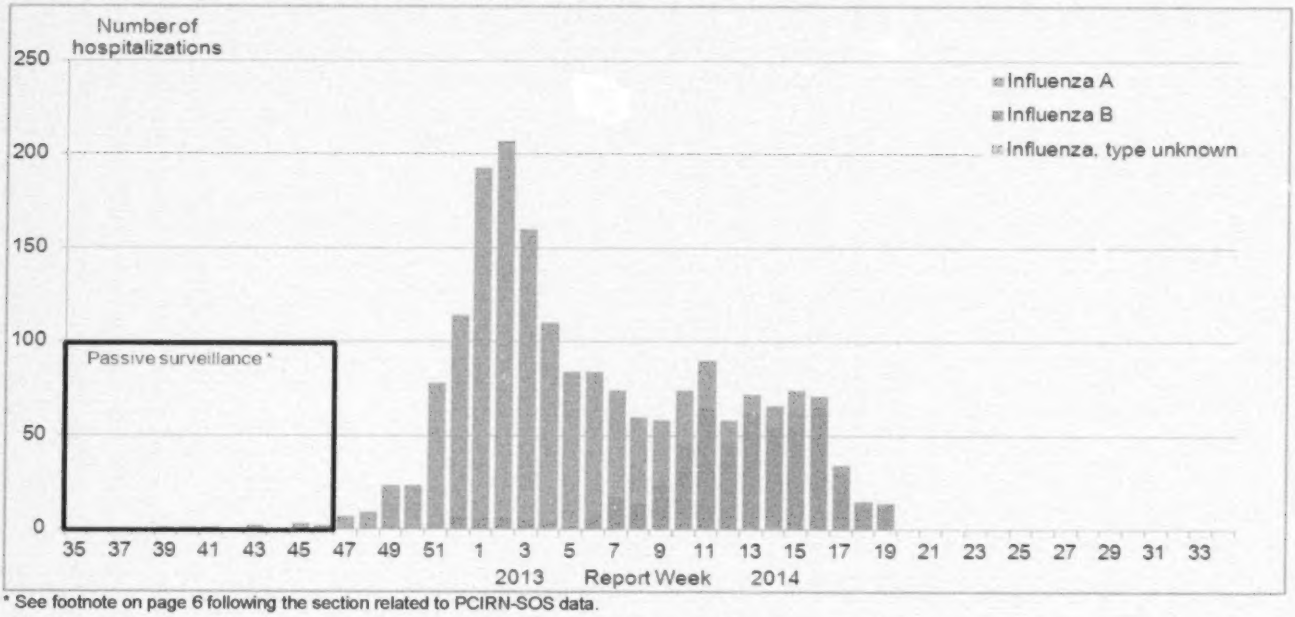
Age groups (years)	Cumulative (25 Aug. 2013 to 10 May 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	12	5	0	7	2	14 (1%)
20-44	271	142	6	123	41	312 (17%)
45-64	509	239	9	261	123	632 (34%)
65+	511	236	54	221	385	896 (48%)
Total	1303	622	69	612	551	1854
% [1]	70%	48%	5%	47%	30%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. * Two cases for which the influenza type has not yet been reported, and six cases for which the age-group was not reported, are not included in Table 5.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



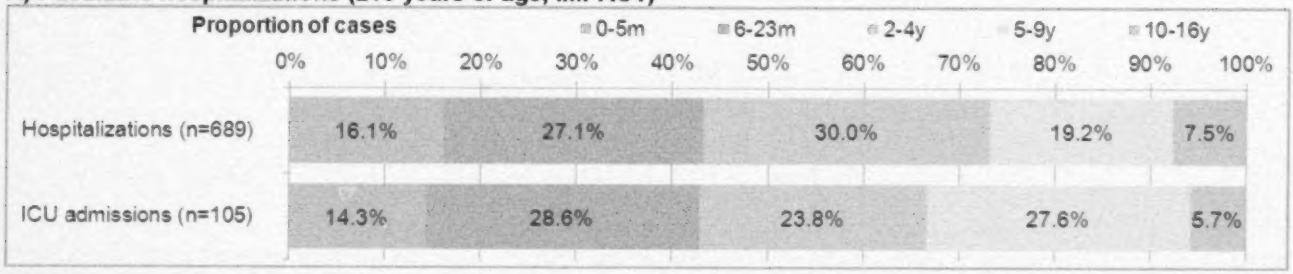
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



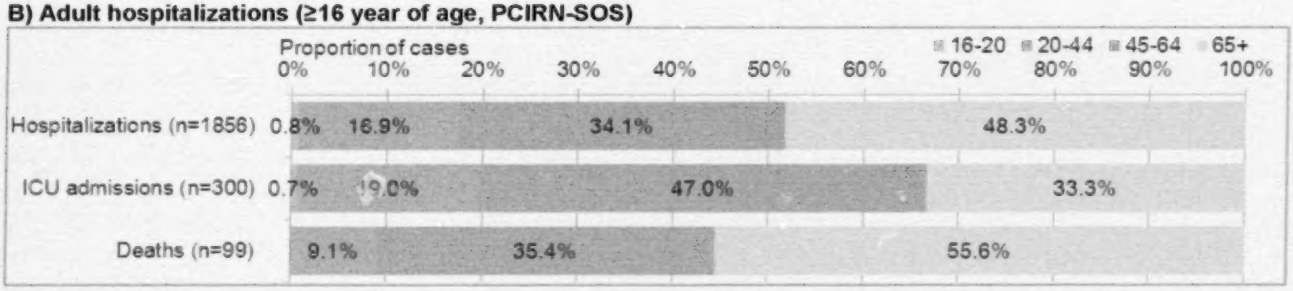
* See footnote on page 6 following the section related to PCIRN-SOS data.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 19, 104 laboratory-confirmed influenza-associated hospitalizations were reported from seven of the nine participating provinces and territories.* As with other surveillance indicators in week 19, the majority were cases of influenza B (92, 88.5%). No ICU admissions were reported in week 19. Fourteen deaths were reported this week: one child under 6 months of age, one adult 45-64 years of age and 12 adults ≥65 years of age; 11 of the 14 with influenza B. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total.

To date this season, 4,731 influenza-associated hospitalizations have been reported, 76.1% with influenza A. The majority (61.1%) of hospitalizations have been cases 45 years of age of older. A significantly greater proportion of cases of influenza B have been ≥65 years of age, and 5-19 years of age, compared to cases of A(H1N1)pdm09 this season (Table 6). A total of 353 ICU admissions have been reported this season, of which 65.4% were adults 20-64 years of age. A total of 275 deaths have been reported. The highest proportion of deaths has been among adults ≥65 years of age (51.2%) followed by adults 20-64 years of age (39.6%). In keeping with the late-season circulation, influenza B has been increasingly reported among hospitalized cases of influenza. To date this season, influenza B has been reported in 23.9% of hospitalizations and 25.1% of deaths. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 10 May 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	616	287	12	317	111	727 (15%)
5-14	134	65	6	63	102	236 (5%)
15-19	36	21	3	12	5	41 (1%)
20-44	613	424	5	184	68	681 (14%)
45-64	1118	704	30	384	216	1334 (28%)
65+	947	467	100	380	610	1557 (33%)
Unknown	136	99	3	34	19	155 (3%)
Total	3600	2067	159	1374	1131	4731
Percentage[1]	76.1%	57.4%	4.4%	38.2%	23.9%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2013-14 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Five new cases of human infection with influenza A(H7N9), including 10 new deaths, have been reported by the World Health Organization since the last FluWatch report. Globally to May 15, 2014, the WHO has been informed of a total of 435 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 156 deaths.

Documents related to the public health risk of influenza A(H7N9), as well as guidance for health professionals and advice for the public is updated regularly on the following websites:
PHAC – Avian influenza A(H7N9)
WHO – Avian Influenza A(H7N9)

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Despite recent increases in the number of cases and sporadic reports of cases exported outside the Middle East, the public health risk posed by MERS-CoV in Canada remains low (see the PHAC Assessment of Public Health Risk). Since the last FluWatch report, two new countries have reported imported cases of MERS-CoV: Lebanon (1) and the Netherlands (2). Globally, from September 2012 to date, the WHO has been informed of a total of 572 laboratory-confirmed cases of infection with MERS-CoV, including 173 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.

Documents related to the public health risk of MERS-CoV, as well as guidance for health professionals and advice for the public is updated regularly on the following websites:
PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)
WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.